

## 3

Yet another advantage is realized by constructing a Braille cell assembly with the aid of an alignment guide, whereby contacts associated with the cell assembly can be quickly and properly oriented upon a printed circuit board.

A further advantage is achieved by providing housings to hold a series of Braille pins, thereby allowing the pins to be easily installed and removed from the Braille display for replacement and/or repair.

The foregoing has outlined rather broadly the more pertinent and important features of the present invention in order that the detailed description of the invention that follows may be better understood so that the present contribution to the art can be more fully appreciated. Additional features of the invention will be described hereinafter which form the subject of the claims of the invention. It should be appreciated by those skilled in the art that the conception and the specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present invention. It should also be realized by those skilled in the art that such equivalent constructions do not depart from the spirit and scope of the invention as set forth in the appended claims.

## BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of the Braille display of the present disclosure.

FIG. 1A is a cross-section of the Braille display taken along Line 1A-1A of FIG. 1.

FIG. 2 is a detailed view of the Braille display with the upper cover removed.

FIG. 3 is a detailed view of the inside of the upper cover of the Braille display.

FIG. 4 is a perspective view of a four cell mounting block for housing the tactile pins associated with the Braille display.

FIG. 4A is a perspective view of a six cell mounting block for housing the tactile pins associated with the Braille display.

FIG. 5 is an exploded view of the mounting block of FIG. 4.

FIG. 6 is a perspective view of a Braille cell assembly interconnected to a backplane board.

FIG. 7 is a side elevational view of a Braille cell assembly.

FIG. 8 is a top perspective view of the Braille cell assembly of FIG. 7.

FIG. 9 is a perspective view of a series of contacts mounted to an alignment guide.

FIG. 9A is a perspective view of the alignment guide being registered with a printed circuit board.

FIG. 10 is a perspective view of the contacts removed from the alignment guide.

Similar reference characters refer to similar parts throughout the several views of the drawings.

PARTS LIST	
20	Display
22	Power Port
24	USB Port
26	Braille Cells
28	Cursor Router Buttons

## 4

-continued

PARTS LIST	
34	Rocker Key
36	Push Button
38	Braille Keys
38(a)	Outer Braille Keys
38(b)	Inner Braille Keys
42	Space Bar
44	Selector Buttons
46	Rocker Bars
48	Panning Buttons
52	Housing
54	Upper Cover
56	Lower Tray
58	Openings in Upper Cover
62	Backplane Board
64	Braille Cell Assemblies
66	Tactile Pins
68	Printed Circuit Board (PCB)
72	Bimorph Reeds
74	Mounting Block
76	Housing of Mounting Block
76(a)	Locking Feature on Mounting Block
78	Depending Forward Edge of Block
82	Channel in Upper Cover
84	Walls with Upper Cover
84(a)	Locking Feature on Walls
86	Rounded Upper Extent of Pins
88	Collar
92	Plate
94	Female Electrical Connector
98	Male connector on Backplane Board
104	Stops on PCB
106	Contacts
108	Base of Contact
112	Support Arm of Contact
114	Biasing Arm of Contact
116	Fulcrum Point
118	Alignment Guide
122	1 <sup>st</sup> Surface
124	2 <sup>nd</sup> Surface
126	Alignment Tabs
128	Alignment Apertures
132	Peripheral edge

DETAILED DESCRIPTION OF THE  
PREFERRED EMBODIMENT

The present disclosure relates to a Braille display. The display supports an array of individual Braille cells with corresponding tactile pins. A Braille cell assembly controls the operation of each cell. The cell assembly includes a number of reeds that are attached to a printed circuit board (PCB) via electrical contacts. The reeds function to selectively lift tactile pins that generate Braille characters that can be felt by the user. The tactile pins associated with a series of cells are housed together in modular blocks. The Braille characters generated by the display correspond to visible characters, such as characters on a computer screen. The display is refreshable to allow for the sequential display of lines, paragraphs, or pages. In accordance with the disclosure, the display is constructed in a manner that minimizes labor and manufacturing costs and that permits the size of the display to be greatly reduced. The various components of the present invention, and the manner in which they interrelate, are described in greater detail hereinafter.

## Braille Display Device

FIG. 1 is a perspective view of a Braille display 20 manufactured in accordance with the present disclosure. The side of display 20 includes a power button and a power port 22 for coupling display 20 to a conventional wall outlet. Alternatively, display 20 can be battery powered. A micro B